UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/657,336	09/07/2000	Dominique P. Bridon	REDC-1511 USA	2073

20872 7590 04/21/2005

MORRISON & FOERSTER LLP
425 MARKET STREET
SAN FRANCISCO, CA 94105-2482

EXAMINER	
PARKIN, JEFFREY S	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/657,336	BRIDON ET AL.	
	Examiner	Art Unit	
	Jeffrey S. Parkin, Ph.D.	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,19-21 and 31-55* is/are pending in the application.

4a) Of the above claim(s) *32-35 and 40-55* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6,19-21,31 and 36-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *see attachments*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Office Action

Status of the Claims

Acknowledgement is hereby made of receipt and entry of the amendment submitted 10 September, 2004. Newly submitted claims 52-55 are directed to an invention that is independent or distinct from the invention originally claimed. The claims are directed toward methods of using the claimed modified peptides or conjugates and are patentably distinct from the claimed invention. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 52-55 are withdrawn from further consideration as being directed towards a nonelected invention (refer to 37 C.F.R. § 1.142(b) and M.P.E.P. § 821.03). Claims 32-35 and 40-51 also stand withdrawn from further consideration as being directed towards a nonelected invention (refer to 37 C.F.R. § 1.142(b) and M.P.E.P. § 821.03). Claims 1, 3, 4, 6, 19-21, 31, and 36-39 are currently under examination.

Information Disclosure Statement

The information disclosure statements filed 08 November, 2004, 07 January, 2005, and 18 February, 2005, have been placed in the application file and the information referred to therein has been considered.

35 U.S.C. § 103(a)

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this

Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103(a).

The previous rejection of claims 1, 3, 4, 6, 19-21, 31, and 36-39 under 35 U.S.C. § 103(a) as being unpatentable over Bolcgnesi *et al.* (1996) in view of Krantz *et al.* (2000), is hereby withdrawn in response to applicants' arguments.

Claims 1, 3, 4, 6, 19-21, 31, and 36-39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bolognesi *et al.* (1996) in view of Tolman et al. (1993). Tolman and colleagues

disclose the preparation of immunoconjugates comprising HIV undecapeptides and a carrier protein (OMPC). The authors reported that "3-Maleimidopropionylation of the Nle amino group of the cyclic peptides gave an electrophilic tether which captured a thiol group from a thiolated carrier protein, OMPC" (see abstract, p. 455). The authors further added that these conjugates had suitable physical properties and were stable. This teaching does not disclose the preparation of the claimed modified peptides.

However, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to modify the antiviral peptides provided by Bolognesi *et al.* (1996), to include succinimidyl- or maleimido-containing reactive groups, as described by Tolman et al. (1993), since these peptides would readily form stable conjugates with known carrier molecules. One of ordinary skill in the art would have been motivated to make said chemical modifications because Tolman et al. (1993) clearly disclose that said modifications would produce peptide conjugates with suitable physical properties. Thus, both the motivation and a reasonable expectation of success were present in the prior art.

Additional Prior Art

The following prior art, which was not relied upon in the office action, is considered germane to applicant's disclosure:

- Marburg, S., *et al.*, 1996, *Introduction of the maleimide function onto resin-bound peptides: a simple, high-yield process useful for discriminating among several lysines", Bioconjugate Chem. 7:612-616.

- Bayer, E. A., *et al.*, 1985, *3-(N-Maleimido-propionyl) Biocytin : a versatile thiol-specific biotinylating reagent*,

Anal. Biochem. 149:529-536.

- Ali, M. S., and S. M. Quadri, 1996, "Meleimido derivatives of diethylenetriaminepentaacetic acid and triethylenetetraaminehexaacetic acid: their synthesis and potential for specific conjugation with biomolecules", Bioconj. Chem. 7:576-583.

- Miyazaki, W., *et al.*, U.S. Patent No. 4,536,391, issued 20 August, 1995.

- Chorev, M., U.S. Patent No. 5,242,680, issued 07 September, 1993.

Non-statutory Double Patenting

The non-statutory double patenting rejection, whether of the obviousness-type or non-obviousness-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington*, 418 F.2d 528, 163 U.S.P.Q. 644 (C.C.P.A. 1969); *In re Vogel*, 422 F.2d 438, 164 U.S.P.Q. 619 (C.C.P.A. 1970); *In re Van Ornum*, 686 F.2d 937, 214 U.S.P.Q. 761 (C.C.P.A. 1982); *In re Longi*, 759 F.2d 887, 225 U.S.P.Q. 645 (Fed. Cir. 1985); and *In re Goodman*, 29 U.S.P.Q.2d 2010 (Fed. Cir. 1993). A timely filed terminal disclaimer in compliance with 37 C.F.R. § 1.321(b) and (c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 C.F.R. § 1.78(d). Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 C.F.R. § 3.73(b).

Claims 1, 3, 4, 6, 19-21, 31, and 36-39 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 6,107,489 in view of Bolognesi *et al.* (1996). An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim is not patentably distinct from the reference claim(s) because the examined claim is either anticipated by, or would have been obvious over, the reference claim(s). *In re Berg*, 140 F.3d 1428, 46 U.S.P.Q.2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 U.S.P.Q.2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 U.S.P.Q. 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Krantz and associates disclose the preparation of tripeptide compounds comprising chemically reactive intermediates (i.e., succinimidyl- or maleimido-containing groups). These intermediates are capable of forming covalent linkages with reactive groups on blood components (see col. 3, lines 34-52; col. 5, lines 9-22, 27-56; col. 6, lines 31-36). These polypeptide derivatives display extended half-lives when conjugated to blood components thereby lowering their IC_{50}, as compared to the unconjugated parent compound (see col. 5, lines 57-65). The inventors provide a detailed discussion about conjugation chemistry and suitable reactive groups including, succinimidyl- and maleimido-containing groups (see col. 5, lines 9-22, 27-56; col. 6, lines 31-36; cols. 6/7, bridging paragraph; col. 7, lines 9-19). It was further reported that there are several advantages to employing maleimido-containing peptides including the following: 1) the modified peptides are generally quite stable in aqueous solutions; 2) protective groups are not required to prevent self-reactivity; 3) increased peptide

stability permits additional purification steps required for *in vivo* administration; and 4) increased chemical stability provides a longer shelf-life (see cols. 6/7, bridging paragraph). Specifically, the inventors reported (see col. 2, lines 40-52) that "conjugated renin inhibitors thereby have extended lifetimes in the bloodstream, as compared to the unconjugated parent drug, and are, therefore, capable of maintaining renin activity for extended periods of time as compared to the unconjugated parent drug." This teaching does not disclose peptides derived from the DP-107 region of HIV-1 gp41.

Bolognesi and colleagues disclose HIV-1 antiviral peptides derived from amino acids 558-594 of the transmembrane envelope glycoprotein (gp41). Specifically, a peptide designated DP-107/T21 was described, as well as, various amino- and carboxyl-terminal truncations of this region (see pages 30-35, Tables II and IIa[1]). Thus, this teaching discloses claimed SEQ ID NOS.: 2, 147, 148, 149, 179, 180, and 181. This teaching does not disclose peptides that have been modified to incorporate a succinimidyl- or maleimido-containing group, which is capable of reacting with amino groups, hydroxyl groups, or thiol groups, to facilitate peptide cross-linking to blood components.

However, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to modify the antiviral peptides described by Bolognesi *et al.* (1996), to include succinimidyl- or maleimido-containing reactive groups, as described by Krantz *et al.* (2000), that are capable of forming stable covalent bonds with blood components. One of ordinary skill in the art would have been motivated to

[1] Please note that Table IIA on page 33 incorrectly references DP-178 in the table description. The parent peptide sequence referenced in the table is actually DP-107 (SEQ ID NO: 25).

make said chemical modifications because Krantz *et al.* (2000) clearly disclose that said modifications have several advantages including the following: 1) increasing peptide stability and the circulating half-life in aqueous solutions; 2) protective groups are not required to prevent self-reactivity; 3) increased peptide stability permits additional purification steps required for *in vivo* administration; and, 4) increased chemical stability provides a longer shelf-life. Thus, both the motivation and a reasonable expectation of success were present in the prior art.

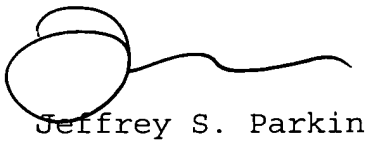
Correspondence

Any inquiry concerning this communication should be directed to Jeffrey S. Parkin, Ph.D., whose telephone number is (571) 272-0908. The examiner can normally be reached Monday through Thursday from 10:30 AM to 9:00 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, James C. Housel, can be reached at (571) 272-0902. Direct general status inquiries to the Technology Center 1600 receptionist at (571) 272-1600. Formal communications may be submitted through the official facsimile number which is (703) 872-9306. Hand-carried formal communications should be directed toward the customer window located in Crystal Plaza Two, 2011 South Clark Place, Arlington, VA. Applicants are directed toward the O.G. Notice for further guidance. 1280 O.G. 681. Informal communications may be submitted to the Examiner's RightFAX account at (571) 273-0908.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on

access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully,



Jeffrey S. Parkin, Ph.D.
Primary Examiner
Art Unit 1648

15 April, 2005